# Expanding Frontiers by understanding current limitations

How to improve for the present and future by understanding the past, not being shackled to it.

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# Topics Covered

Limitations

Misunderstanding

Education

Technology

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# Hindsight is a wonderful thing

1. 'Everyone's always asking me when Apple will come out with a cell phone. My answer is, "Probably never"'

David Pogue, The New York Times, 2006. The iPhone came out in 2007.

2. 'Someone inquired if I was a foreigner'

George Stephenson on the reaction of a Parliamentary committee in 1821 to his claim that a steam locomotive could reach a speed of 10 mph.

3. 'There is… no chance… space satellites will be used to provide better telephone… television or radio service inside the United States'

Tam Craven, Federal Communications Commissioner, 1961.

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Where did the 12,500 lbs (5,700 Kg) distinction between commuter and transport category aircraft come from?

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Civil Aeronautics Board used a design aircraft and suggested any aircraft a bit lighter than that would be CAR 3 Commuter and heavier would be CAR 4B Transport category.

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Civil Aeronautics Board = Federal Aviation Administration

CAT 3 = Federal Aviation Regulation Part 23

CAR 4B = Federal Aviation Regulation Part 25

# Design aircraft Lockheed Model 14 - 1937

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# Problems with aircraft > 5,700 KG

1. Generally two pilot
2. Requires balanced field length ( increased runway length)
3. Designed for high usage (2,000 hrs PA)
4. Normally better range
5. Usually better power to weight ratio

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# Problems with aircraft > 5,700 KG

1. Not based on pilot workload
2. Not based on external clearances (visibility)
3. Not based on ergonomics

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# Bronwyn Bishop decides future transport to Geelong will be by bus!!!

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# Category A aircraft are capable of single engine flight in the event of an engine failure

There may be some limitations

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# B K 117  B 2 verses  Bell 407

Similar payload

Similar range

Similar speed

Twins are safer than singles!!!!

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# Limitations include:

1. optimal weight
2. favourable wind
3. appropriate temperature
4. surveyed approach departure to the correct levels
5. correct slope of the TLOF
6. correct drop down height ( if using drop down)
7. trained and current pilot (crew)
8. appropriate lighting and markings

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# B K 117  B 2

| | |
|---|---|
| Empty equipped weight | 2400 kgs |
| Fuel 500 kgs, 4 people on board. | 3244 kgs |

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***EFFECTIVITY*** *S/N 7253 and subsequent or after S/B-MBB-BK117-60-113*

**MAXIMUM TAKEOFF AND LANDING GROSS MASS, CATEGORY A (VTOL)**

LYCOMING LTS 101 - 750B - 1

BLEED AIR HEATING – OFF

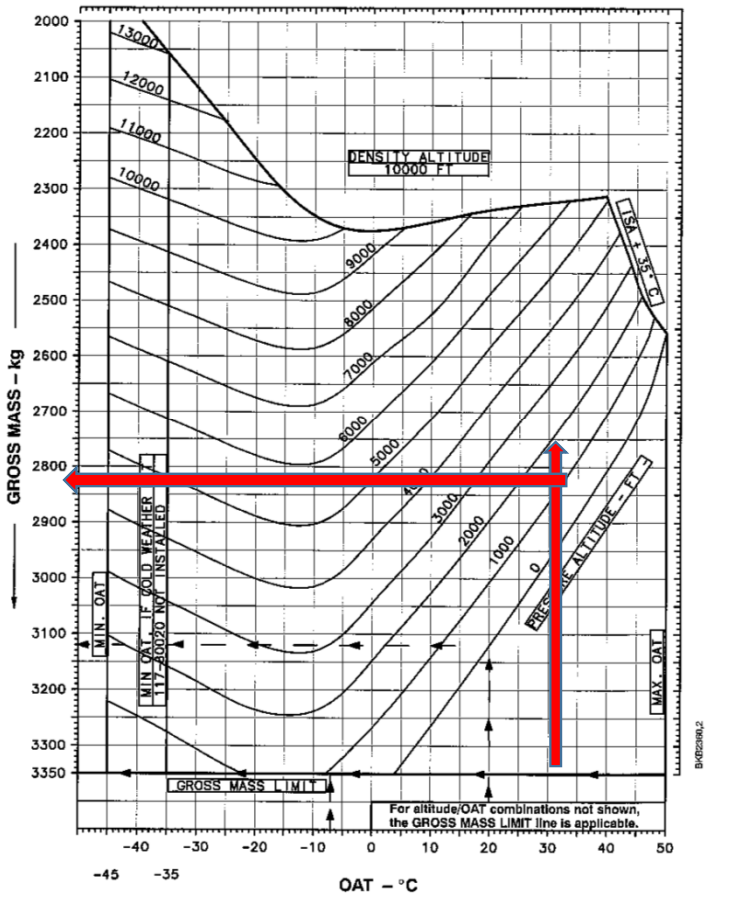


Fig. C1 Maximum Takeoff and Landing Gross Mass, Category A (VTOL)



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# B K 117  B 2

Fuel 500 kgs, 4 people on board.  3244 kgs

At 30 C, 500 ft. AGL. (CAT A MAUW)  2930 kgs

Therefore unable to land or take off and meet Cat A unless 320 kgs are reduced

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# Hindsight is a wonderful thing

4. I think there is a world market for maybe five computers
Thomas Watson, president of IBM, 1943.

5. 'Computers in the future may weigh no more than one and a half tons'
Popular Mechanics, 1949.

6. 'Nuclear-powered vacuum cleaners will probably be a reality within 10 years'
Alex Lewyt, president of Lewyt vacuum company, 1955.

7. 'Television won't be able to hold on to any market it captures after the first six months. People will soon get tired of staring at a plywood box'
20th Century Fox executive Darryl Zanuck, 1946.

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**Australian Government**

**Civil Aviation Safety Authority**

# Civil Aviation Order 20.11 (as amended)

made under subregulations 252 (1) and 253 (5) of the *Civil Aviation Regulations 1988*.

This compilation was prepared on 23 July 2007 taking into account amendments up to *Civil Aviation Order 20.11 Amendment Order (No. 1) 2007*.

Prepared by the Legislative Drafting Branch, Legal Services Group, Civil Aviation Safety Authority, Canberra.

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# Aeromedical Crew Duties (CAO20.11)

11.1

The operator and, where appropriate, the pilot in command, of an ***aircraft engaged on charter or regular public transport operations*** shall assign to each category of required crew member, as appropriate, the necessary functions to be performed in an emergency or situation requiring emergency evacuation. These functions shall be realistic, practicable and such as to ensure that any reasonably anticipated emergency can be adequately handled and shall take into consideration the possible incapacitation of individual crew members.

12

Crew member proficiency in the execution of emergency procedures (etc)

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# Aeromedical Crew Duties (CAO20.11)

***Serious Aeromedical Crew duties are to be learnt to the point they become a reaction; not as a means of passing a test***

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# Hindsight is a wonderful thing

8. 'The Internet… this most trendy and oversold community'
Clifford Stoll, Newsweek, 1995.

9. 'The Americans have need of the telephone, but we do not. We have plenty of messenger boys'
Sir William Preece, later chief engineer at the Post Office, 1878.

10. There could be provision in Europe for up to 100,000 cars in the future
Early Mercedes Benz market research

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Human External Cargo winches (hoists) feature a ballistic cable cutter. The idea being if an aircraft has an engine failure the flight crew are able to cut the cable and fly or autorotate to a safe location.
This has been a feature since single engine piston helicopters.

Personal research has indicated that inadvertent or inappropriate activation of the cable cutter has resulted in more deaths and injuries than they save.

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# Possible Ballistic Cable cutter alternative

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# How do you know if what you are doing is right?

- Is it what you have always done?
- Is it what the previous system did?
- Is what the equivalent interstate (or neighbouring) service does?
- Is it the socially acceptable norm?

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# How do you know if what you are doing is right?

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Is it what the previous system did?

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# How do you know if what you are doing is right?

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Is it the socially acceptable norm?

# How do you know if what you are doing is right?

- Would it still be an acceptable practice in the cold review of a Coronial Inquest (remember ignorance is not a defence)?

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# Expanding Frontiers

Challenge - Limitations

Clarify - Misunderstandings

Use - Education for learning not ticking the box

Evolve – Technology

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# Catastrophic Spelling Error Sees Australian Croquet Team Take To Field In 4th Test

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